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PATENT APPLICATION
ATTORNEY DOCKET NO. 10002759 -4

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Joshua N. Hogan

Confirmation No.: 2541

Application No.: 10/610933

Examiner: Chu, Kim Kwok

Filing Date: Jun 30, 2003

Group Art Unit: 2653

Title: Method For Accurate Positioning Of Data Marks And Spaces On An Optical Disc

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 05/20/2005.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) $500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

( ) (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d) for the total number of months checked below:

( )	one month	$120.00
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( ) The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account 08-2025 the sum of $500.00. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

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Number of pages: 16

Typed Name: Cathi Christensen

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Respectfully submitted,

Joshua N. Hogan

By A. W. Winfield

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Date: July 20, 2005

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PATENT APPLICATION

ATTORNEY DOCKET NO. 10002759-4

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Josh Hogan

Serial No.: 10/610,933

Examiner: Chu, Kim Kwok

Filing Date: 06/30/2003

Group Art Unit: 2653

Title: METHOD FOR ACCURATE POSITIONING OF DATA MARKS AND SPACES ON AN OPTICAL DISC

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

BRIEF ON APPEAL

INTRODUCTION

Pursuant to the provisions of 37 CFR Part 41, Subpart B, applicants hereby appeal to the Board of Patent Appeals and Interferences (the "Board") from the examiner's final rejection dated 03/22/2005. A notice of appeal was timely filed on 05/20/2005, in accordance with 37 CFR § 41.31(a)(1).

REAL PARTY IN INTEREST

The entire interest in the present application has been assigned to Hewlett-Packard Development Company, L.P. as recorded in the parent application at reel 013780, frame 0741.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

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STATUS OF CLAIMS

Claims 1-8 are pending in the application.

Claims 1-8 have been rejected.

Claims 1-8 are on appeal.

STATUS OF AMENDMENTS

No after-final amendments have been submitted.

SUMMARY OF CLAIMED SUBJECT MATTER

The invention relates generally to rewritable optical discs, and more specifically to using spatial features on a disc to facilitate accurate positioning of data marks and spaces. Spatial features (notches, bumps, etc.) (page 10, lines 6-17; figure 2, 206, 208) are implemented such that they intentionally distort the analog Data Read signal (page 12, line 26 through page 13, line 1; page 13, lines 10-14; figures 4B and 5B). If a transition between a mark and a space is not near a groove feature, the distortion does not affect the resulting binary Read Data signal (page 13, lines 1-7; figures 4B, 4C). In contrast, if a transition between a mark and a space is near the groove feature, the timing of the resulting binary Read Data signal is affected significantly (sufficient to cause a data read error) (page 13, lines 14-24; figures 5B, 5C). For calibration, marks or spaces are written adjacent to spatial features, and the timing of the Write Data signal is adjusted while monitoring data read errors (page 14, lines 12-27; figure 6). Predetermined data sets may be used, for which the error rate as a function of write time has been characterized (page 15, lines 14-19; figure 7).

Claim 1 specifies writing a data set (page 15, line 14 through page 16, line 6; figure 7, 700), with a write timing, at an area on an optical disc that has spatial features (page 10, lines 6-17; figure 2, 206, 208) that distort an analog read data signal (page 12, line 26 through page 13, line 1; page 13, lines 10-14; figures 4B and 5B), the distortion varying as a function of write timing, where the data set has a characterized read error rate

as a function of write timing at the area that has the spatial features (figure 6); reading the data set from the optical disc; determining a read error rate for the data set (figure 7, 702); and adjusting the write timing based on comparing the read error rate of the data set and the characterized read error rate as a function of write timing.

Claim 2, dependent on claim 1, further specifies observing whether the read error rate increases when write timing is shifted in one direction (page 16, lines 2-6).

Claim 3, dependent on clam 1, further specifies observing whether the read error rate decreases when the write timing is shifted in one direction (page 16, lines 2-6).

Claim 4, dependent on claim 1, further specifies repeating the steps of writing a data set, reading the data set, and determining a read error rate for the data set, multiple times (page 14, lines 16-27).

Claim 5 specifies writing a data set, with a write timing, at an area on an optical disc that has spatial features (page 10, lines 6-17; figure 2, 206, 208) arranged in accordance with the data set; reading the data set from the optical disc; determining a first read error rate for the data set; adjusting the write timing; writing the data set at the area on the optical disc that has spatial features; reading the data set from the optical disc; determining a second read error rate for the data set; selecting a lowest read error rate among the first and second read error rates; and choosing a write timing corresponding to the lowest read error rate (page 16, lines 7-22).

Claim 6 specifies writing a data set, with a write timing, at an area on an optical disc that has spatial features (page 10, lines 6-17; figure 2, 206, 208) arranged in accordance with the data set; reading the data set from the optical disc; determining a read error rate for the data set; adjusting the write timing; and repeating the preceding steps until the read error rate is less than a predetermined value (page 16, lines 7-22).

Claim 7 specifies writing a first data set, with a write timing, at an area on an optical disc that has spatial features (page 10, lines 6-17; figure 2, 206, 208) that distort an analog read data signal (page 12, line 26 through page 13, line 1; page 13, lines 10-14; figures 4B and 5B), the distortion varying as a function of write timing; writing a second data set, with the write timing, at an area on the optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing; reading the first data set and the second data set from the optical disc; determining a first

read error rate for the first data set, and a second read error rate for the second data set; comparing the first and second error rates; and adjusting the write timing based on the comparison of the first and second error rates (page 16, lines 7-22).

Claim 8 specifies writing a data set, having a known error rate as a function of write timing, at an area on an optical disc that has spatial features (page 10, lines 6-17; figure 2, 206, 208) arranged in accordance with the data set; reading the data set; measuring a read error rate; comparing the read error rate to the known error rate as a function of write timing to determine a write timing error (page 16, lines 7-22).

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

1. Whether claims 1-8 are unpatentable under 35 U.S.C. § 102(e) as anticipated by U.S. Patent Number 6,031,800 (Narumi *et al.*).

ARGUMENT

CLAIMS 1 AND 4, ARGUMENT 1

Claim 1 specifies writing a data set, with a write timing, at an area on an optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing, where the data set has a characterized read error rate as a function of write timing at the area that has the spatial features. Narumi *et al.* do not teach or suggest writing a data set, with a write timing, at an area on an optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing, where the data set has a characterized read error rate as a function of write timing at the area that has the spatial features.

In the office action mailed 03/22/2005, the examiner characterizes guide grooves (figure 29, 2302) as spatial features. Narumi *et al.* do not teach or suggest that guide grooves distort an analog read signal, the distortion varying as a function of write timing. In addition, the examiner characterizes pit trains (figure 29, 2502) as spatial features. Narumi *et al.* do not teach or suggest that data is written at the area that has pit trains.

CLAIMS 1 AND 4, ARGUMENT 2

Claim 1 specifies writing a data set having a characterized read error rate as a function of write timing; determining a read error rate for the data set; and adjusting the write timing based on comparing the read error rate of the data set and the characterized read error rate as a function of write timing. Narumi *et al.* do not teach or suggest determining a read error rate for a data set and adjusting the write timing based on comparing the read error rate of the data set and a characterized read error rate as a function of write timing.

In the office action mailed 03/22/2005, page 3, the examiner states: "Narumi teaches that 'to obtain an error rate below 0.0005, the variation range of the start point for writing was set at 16T' (column 8, lines 47-58) fulfills the requirement of the meaning of the word 'compared' because the variation in range is based on examining a relation of the error rate of the written data." The examiner's remarks do not address what is claimed. Setting the variation range of the start point based on examining a relation of the error rate of the written data does not equate to reading the error rate of the data set, and comparing that error rate is compared to a characterized read error rate. Nowhere in Narumi *et al.* or in the examiner's remarks is an error rate of a data set being read except to generate figures 6A and 6B. Assume for the sake of argument that figures 6A and 6B represent the result of characterizing the error rate of a data set as a function of write timing. To anticipate claim 1, that data set must be written, the error rate must be read, and write timing must be adjusted based on that comparing the read error rate to the characterized read error rate, and in Narumi *et al.* there is no error rate being read that is compared to a characterized read error rate. In the office action mailed 03/22/2005, page 3, the examiner focuses on the word "comparison", choosing to use the phrase "based on", but misses the point that Narumi *et al.* do not read the error rate when choosing a write timing.

CLAIMS 2 AND 3

Claim 2 further specifies observing whether the read error rate increases when write timing is shifted in one direction. Claim 3 further specifies observing whether the read error rate decreases when write timing is shifted in one direction. Narumi *et al.* do not teach or suggest observing whether the read error rate changes when write timing is shifted in one direction.

In the office action mailed 03/22/2005, the examiner cites Narumi *et al.*, figures 6A and 6B. Nothing in figures 6A or 6B or the discussion of figures 6A and 6B at column 8, line 23-58 teaches or suggests anything about shifting write timing in one direction. The figures and discussion teach only variation of write timing.

CLAIM 5, 6, AND 8, ARGUMENT 1

Claims 5, 6, and 8 specify writing a data set at an area on an optical disc that has spatial features arranged in accordance with the data set. Narumi *et al.* do not teach or suggest writing a data set at an area on an optical disc that has spatial features arranged in accordance with the data set.

In the office action mailed 03/22/2005, page 6, the examiner cites Narumi *et al.*, figures 28 and 29, stating that the guide grooves and pit trains are arranged in accordance with the data set, and stating that data sets are recorded in pit trains. Neither statement has any support in Narumi *et al.*. Data is written in the guide grooves which are described either as concentric circles or a spiral (column 1, lines 20-21). There is no teaching or suggestion that guide grooves are arranged in accordance with the data set. The pit trains are ID areas (column 1, lines 17-18). There is no teaching or suggestion that data sets are written in the ID areas, much less any teaching or suggestion that ID areas are arranged in accordance with the data set.

CLAIM 6, ARGUMENT 2

Claim 6 specifies repeating steps until the read error rate is less than a predetermined value. This element is not present in claim 5, but the examiner does not address this different element. No *prima facie* case for anticipation has been established.

In the office action mailed 03/22/2005, page 7, regarding claim 6, the examiner merely refers to the discussion of claim 5, which does not discuss repeating steps until the read error rate is less than a predetermined value.

CLAIM 7, ARGUMENT 1

Claim 7 specifies writing a first data set at an area on an optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing. The discussion above regarding claims 1 and 4, argument 1, apply equally to this first element of claim 7. That is, Narumi *et al.* do not teach or suggest that guide grooves distort an analog read signal, the distortion varying as a function of write timing, and Narumi *et al.* do not teach or suggest that data is written at the area that has pit trains.

CLAIM 7, ARGUMENT 2

Claim 7 specifies writing first and second data sets. In the office action mailed 03/22/2005, page 7, the examiner cites Narumi *et al.*, column 6, lines 19-25 as disclosing writing first and second data sets. The cited text is irrelevant to writing first and second data sets. No *prima facie* case for anticipation has been established.

CLAIM 7, ARGUMENT 3

Claim 7 specifies writing first and second data sets, determining a first read error rate for the first data set, and a second read error rate for the second data set; comparing the first and second error rates; and adjusting the write timing based on the comparison of the first and second error rates. The discussion above regarding claims 1 and 4, argument

2, apply equally to this element of claim 7. That is, in Narumi *et al.* there is no error rate being read that is compared to anything, much less the error rate of a second data set.

In the office action mailed 03/22/2005, the examiner does not provide any cite to Narumi *et al.*for comparing error rates of first and second data sets. No *prima facie* case for anticipation has been established.

CLAIM 8, ARGUMENT 2

Claim 8 specifies comparing the read error rate to the known error rate as a function of write timing to determine a write timing error. The discussion above regarding claims 1 and 4, argument 2, apply equally to this element of claim 7. That is, in Narumi *et al.* there is no error rate being read that is compared to anything.

CLAIM 8, ARGUMENT 3

Claim 8 specifies comparing the read error rate to the known error rate as a function of write timing to determine a write timing error. Narumi *et al.* do not teach or suggest determining a write timing error.

Narumi *et al.* In the office action mailed 03/22/2005, the examiner does not provide any cite to for determining a write timing error. No *prima facie* case for anticipation has been established.

CONCLUSION

In view of the above, applicant respectfully requests that the examiner's rejection of claims 1-8 be reversed.

Respectfully submitted,

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July 20, 2005

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CLAIMS APPENDIX

1. A method, comprising:

writing a data set, with a write timing, at an area on an optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing, where the data set has a characterized read error rate as a function of write timing at the area that has the spatial features;

reading the data set from the optical disc;

determining a read error rate for the data set; and

adjusting the write timing based on comparing the read error rate of the data set and the characterized read error rate as a function of write timing.

2. The method of claim 1, further comprising:

observing whether the read error rate increases when write timing is shifted in one direction.

3. The method of claim 1, further comprising:

observing whether the read error rate decreases when the write timing is shifted in one direction.

4. The method of claim 1, further comprising:

repeating the steps of writing a data set, reading the data set, and determining a read error rate for the data set, multiple times.

5. A method, comprising:

writing a data set, with a write timing, at an area on an optical disc that has spatial features arranged in accordance with the data set;

reading the data set from the optical disc;

determining a first read error rate for the data set;

adjusting the write timing;

writing the data set at the area on the optical disc that has spatial features;

reading the data set from the optical disc;

determining a second read error rate for the data set;

selecting a lowest read error rate among the first and second read error rates; and

choosing a write timing corresponding to the lowest read error rate.

6. A method, comprising:

writing a data set, with a write timing, at an area on an optical disc that has spatial features arranged in accordance with the data set;

reading the data set from the optical disc;

determining a read error rate for the data set;

adjusting the write timing; and

repeating the preceding steps until the read error rate is less than a predetermined value.

7. A method, comprising:

writing a first data set, with a write timing, at an area on an optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing;

writing a second data set, with the write timing, at an area on the optical disc that has spatial features that distort an analog read data signal, the distortion varying as a function of write timing;

reading the first data set and the second data set from the optical disc;

determining a first read error rate for the first data set, and a second read error rate for the second data set;

comparing the first and second error rates; and

adjusting the write timing based on the comparison of the first and second error rates.

8. A method, comprising:

writing a data set, having a known error rate as a function of write timing, at an area on an optical disc that has spatial features arranged in accordance with the data set;

reading the data set;

measuring a read error rate;

comparing the read error rate to the known error rate as a function of write timing to determine a write timing error.

EVIDENCE APPENDIX

Does not apply

RELATED PROCEEDINGS APPENDIX

Does not apply

P.16